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ABSTRACT

The development and validation of an employer-centered action system for curriculum development and evaluation are described. The system used a descriptive/action research design whereby a research team interviewed all major employers in Broward County Florida in a two-year period. Results of an employer needs assessment and task analyses were used to identify exit competencies and to translate them into new curricula or into evaluation of existing curricula. The resultant employer-centered action system for curriculum development is in operation at a large community college. Population and sample selection, instrumentation, data collection procedures and analysis, and results of a training needs assessment are discussed. A literature review and references are included. (Author/SW)

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CURRICULUM DESIGN AND EVALUATION:
An Employer - Centered Action Approach

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Mary Corcoran
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Abstract

CURRICULUM DESIGN AND EVALUATION: AN EMPLOYER-CENTERED ACTION APPROACH

Curricula, for the most part, are developed on the basis of what has "always been taught" or what educators "know" students need. Since many community college programs ultimately lead to employment, potential employers can be productively involved in the process of curriculum development. The paper reports a study which developed and validated an employer-centered action system for curriculum development and evaluation. It utilized a descriptive/action research design whereby a research team personally interviewed all major employers in a two-year period. Results of an employer needs assessment and task analyses were used to identify exit competencies and to translate them into new cirricula or into evaluation of existing curricula. The resultant employer-centered action system for curriculum development is in operation at large, urban community college and fostering positive interaction and articulation between the college and its community.

Curriculum Design and Evaluation

Curriculum for the most part, are developed on the basis of what has "always been taught" or what educators "know" students need. It appears that their design is often initiated by a faculty member with a personal interest in the area and often not supported by a rational, planned system of evaluation and revision to ascertain that they are current.

Statement of the Problem

The problem was that there was no validated model for utilizing potential employer data to design and/or to evaluate curricula.

Statement of the Purpose

The purpose of the study was to develop and to validate an employer-centered action system for curriculum development and evaluation which included needs assessment of employers, identification of priority needs, and task analyses.

Objectives of the Study

The study was divided into four phases which are listed in the objectives below.

Phase I: Employer Needs Assessment

1. To determine the existing training needs of large businesses, industrial firms, and local units of Government in Broward County;
2. To determine which educational agencies in Broward County could best fulfill those needs; and
3. To inform the companies of the results in order to begin planning for the needed programs.

Phase II: Task Analysis

To select the highest need priorities for each area identified in Phase I (discipline and sector) and to initiate course/program development:

a. Conduct task analyses for all job titles as necessary

b. Determine job-entry level competencies

c. To form an advisory board among business, industry and local units of government and educational institutions in order to establish a system for identification and prioritization of Broward County employer training needs and the systematic updating of these needs; and

d. To conduct all necessary research for documentation of resources available for the delivery of new courses/programs.

Phase III: Implementation

1. To utilize competencies identified in Phase II to initiate liaison among faculty and potential employers of graduates for planning and program decision-making purposes.
2. To initiate faculty evaluation of programs based upon identified competencies.
3. To translate competencies into curricula.
4. To implement the new and/or revised programs.

Phase IV: Feed back

1. To compare programs with employment competencies and with each other on a periodic basis to loop back to the beginning of Phase I.
2. To give information back to the college staff, students, potential employers, and the community.

Research Questions

The following research questions are addressed in the model:

1. What are the current employee qualities, training incentives, and recruitment practices?
2. What are the existing training needs and interests of businesses, industrial firms, and local units of government by sector and types of positions?
3. Which educational agencies in the service area can best fulfill the identified needs?
4. What are the occupational priorities of greatest need as defined by employers within each discipline which are appropriate to post-secondary level education?
5. What are the job-entry level competencies for each occupational area identified?
6. What recommendations could be made with regard to curriculum development or curriculum evaluation and the resources available for implementation of new occupational programs and/or courses?
7. What are the best feedback strategies to inform college staff students, employers, and the community of the results in order to begin planning for the needed programs?

Review of Literature

The community college, by definition, both serves and is governed by it's local community. The term "community college," was first used by the 1947 President's Commission on Higher Education in reference to public junior colleges which were both "community centered" and "community serving." Community colleges spread throughout the country in the 1960's to become both the catalysts and the products of community consciousness (Gleazer, 1968).

Myran (1978, p.2) proposed that the community college has "the responsibility to maximize the congruence between its services and programs and the educational needs and aspirations of all population groups in its service areas." A needs assessment is a systematic study to identify if a need exists and, if so, to validate the existing need, or gap between "what is" and "what should be." In this paper, a need is defined as that gap (Kaufman, 1972). Research methods for assessing needs are becoming essential tools for educational decision making and academic planning (Lenning in press).

Campbell (1977, p.40), points out that, "Industrial education, to be effective, must serve the people who live, work, and play in a particular environment...If industrial education is to be meaningful and assist the student toward gainful, rewarding employment, all levels of industrial education must step back and take a long hard look. Industrial educators should determine if student and community needs are being met. A needs assessment is vital."

"Relationships between education and work become closer...Yet both educators and the business-labor-industry community have failed to act constructively in accommodating to this fact." (Hoyt, 1975, p.355)

The need to relate the students' learning needs and goals to employers' needs and the demands of the job market is extremely important. The growth trends in the U.S. Department of Labor's Occupational Outlook for the Mid - 1980's (1974) indicate that the need for professional and technical workers will grow faster than any other occupational group. Summaries of reports commissioned by the Southern Regional Education Board (1973) showed seven out of ten fields studies to be growing or suffering shortages. Yet a gap between what students and educators see as necessary to a meaningful and rewarding career and what the business and industry community needs in order to operate effectively seems to be widening.

No matter if a student majors in liberal arts or technical programs, in most cases the ultimate purpose of achieving a degree in modern American society is to obtain employment. Hirst (1977) referred to this growing phenomenon as the need for establishing "a positive link between what is taught and what is required on the job.

Most needs assesments (Witkin, 1975) show concern with learner needs or employee satisfaction and work attitudes. However, little has been done to assess the employer's satisfaction with employees and the employer's training needs.

In order to know what to teach, one must research the job requirements. Curriculum content should be focused on the necessary program outcomes so that graduates can obtain gainful employment.

Curriculum is defined here as "intended learning outcomes" to be viewed as the "product" (i.e., "what is to be learned") as distinguished from instruction, or the "process" (how such learning is to be attained). What curriculum is to be learned is dependent upon policy setting (Johnson, 1967, p.135). The intent of the present study is to focus on curriculum rather than instruction in order to determine the "intended learning outcomes."

DeCaro (1979, p.1.) supported the purpose of the present study when he said that, "The initial step in establishing any course of study in a technical career (associate degree level) is determining the skills that a graduate must possess for successful employment. There is general agreement that these skills should reflect the needs of the profession in which the graduate is to be employed. At best, needs of a profession are derived from the advice of a panel of experts in the field. At worst, they are based upon the experience of a single consultant or faculty member. Although needs so derived may reflect the skills required by a profession, they have a fairly high probability of being deficient."

Fowler and Seymour (1974, p.46) further supported this approach when they stated that, "Development of any program should consist of a systematic approach to curriculum development based on an occupational analysis of the specific speciality." Similarly, Flanagan (1973, p.551) after studying student populations and educational programs, concluded that, "Recent experience indicates that the quality of the present educational programs can be improved more by systematic selection of <u>what</u> is to be taught than by improving <u>how</u> it is taught."

Many applications have been made in public and private agencies for job description purposes and for developing training curricula. The following two factors are common throughout:

1. "Comprehensive listing of tasks that comprise the specific job activities, serving as the basic unit of an occupation for analysis purposes; and
2. Heavy reliance upon job incumbents (or others very close to the actual work situation) as the primary sources of information", (Ammerman, et.al., 1977, p. 14).

The task inventory, or description, and occupation survey processes are essentially job description techniques.

Task analysis is a systematic process of: 1) defining the desired outcomes; 2) identifying variables which affect the outcomes; and 3) developing a plan whereby these variables may be managed to produce the desired outcomes" (Boston, 1972, p.7).

The primary purpose of task analysis is to define the desired outcomes and to plan a course of action which will produce the desired outcomes as defined.

The implementation of a task analysis enables more accurate and detailed information to be collected. King and Brooks (1976) defined the task analysis as "the process of reviewing the actual job content, including task lists, procedures for performing tasks, information related to tasks, quality control standards and equipment; tools and supplies. The plan developed as a result of the task analysis is labeled "the course of action" and sequences activities planned in order to achieve the outcome objective. Task analysis allows the curriculum designer to focus on necessities while eliminating unproductive allocation or resources.

Methodology

Population and Sample Selection

All employers(830) with fifty or more employees in the fall of 1977 were included in the population for Phase I. Identification of the entire population was difficult, especially in a large, fast growing county such as Broward. However, the list of employers was obtained from the State Department of Commerce and confidentiality was assured.

Five-hundred-and-forty was chosen as the total sample size with the hope there would be at least 384 completed, usable interview questionnaires. The 384 sample size is required for a 0.05 level of significance with 5% precision, as determined by Backstrom and Hursh (1963). A stratified random sampling of the 540 was selected on the basis of the following:

Geographic Location -- North, Central, and South sectors of the county paralleling the North, Central, and South campus regions)

Company Type -- Industrial (21.5%)
Non-industrial (75.7%)
City Government (2.8%)

Phase II included a saturation sampling of all existing companies in the field being studied with no regard to size or geographic location. Analysis of respondents versus non-repsondents indicated no significant difference between the two groups. Therefore, the sample obtained from the respondents was generalizable.

Instrumentation

The variables to be included in the task analysis were determined by incorporating the objectives of the project, extensive library research, and discussions

with relevant BCC campus personnel and community advisory organizations (Ft. Lauderdale Area Chamber of Commerce, Broward Industrial Board, and Urban League). Following is a list of the variables. Operational definitions and response formats are available upon request from the author (see Mehallis, 1978 & 1979): geographic sector, company type, employee qualities, types of positions, recruitment sources, current training, identified training needs, interest in training programs, incentives, employment of handicapped, affirmative action, position objective, educational requirement, salary, working hours, special test, employee interaction, promotion strategy, supervisory responsibilities, special language requirements, job/task description (duty definition, frequency and importance of performance) and equipment utitlization.

Pilot-testing was conducted with randomly selected employers stratified in the same manner as the sampling distribution for the survey itself. The pilot test was utilized to validate both the instrument and the methodology. Revisions were made in the occupational job title listings and in the content and wording of questionnaire items. Even though response items appear in the questionnaire, they were to promote ease of coding by the interviewer rather than to inhibit open-ended responses of employers. The instrument was devised to require no more than half-an-hour interviewing time. The questionnaire is available from the author upon request.

Research Method

The research method utilized in the study was the descriptive, personal interview approach.

Procedures for Data Collection and Analysis for Phase I

A research coordinator and three interviewers were hired by the Director of Institutional Research utilizing CETA grant monies. They received orientation

to the community college and specialized interviewer training, including role playing activities. The general procedures followed by the staff for the interviewing process are enumerated below:

1. Obtained verbal commitment of community groups (in this case, the Broward Industrial Board (BIB), Fort Lauderdale Area Chamber of Commerce, and the Urban League)
2. Obtained documented commitment in the form of a letter to employers from the supporting community groups
3. Obtained a mailing list of the population
4. Selected the stratified random sampling from the population to reflect its components in a more manageable size
5. Mailed the BIB/Chamber letters to employers introducing the project and the project director's name
6. Sent a follow-up letter from the project director to the sample of employers introducing the name of the interviewer who would call them
7. Interviewers phoned employers to set up times for the personal interviews and sent copies of the occupational job titles asking for current, one-, two-, and tive-year projections to be completed in advance and available for the interviewer to retrieve at the time of the interview
8. Conducted personal interviews of approximately one-half-hour duration
9. Thank-you letters were sent to the interviewed employers, including follow-up letters requesting the occupational job titles from those who had not completed them and returned them previously.

The data were anlyzed by means of both descriptive and inferential statistics. Descriptive statistics consisted of frequency counts, modes, and crosstabulations using the Statistical Package for the Social Sciences (SPSS) computer program. Graphic presentation of data in the form of charts and matrices was utilized for

further description of questionniare responses and the mapping of existing educational programs in the area. The analysis of variance was used to determine significance at the 0.05 level of significance. A panel of experts assisted in selecting feedback strategies.

Mapping Training Needs with Educational Offerings

Upon completion of the survy, all training needs were compiled and anlyzed. Many of the courses or programs needed by employers were already being offered at public and private schools in the area. In order to inform employers of existing programs and where they were being taught, an investigation was made of the courses offerings and content of each school. This information was obtained by calling or writing to the schools to request program listings. A listing of School Board programs was obtained from the State Division of Vocational Education. After analyzing the infromation received, the courses wereorganized by major disciplines and a chart was devised to send to participating empoyers showing were programs were being taught in both public and private schools.

Results for Phase I

The findings of the needs assessment were presented in three primary categories:

a) Types of training identified by employers as most needed in Broward County

b) Highest projected demand occupations

c) Available educational programs for training and identification of areas with unfulfilled training needs. (Mehallis, 1978, p. 79)

Companies were informed of the results by means of a packet including a letter from the Project Director and Coordinator thanking them for their

contributions, a copy of the "Training Needs Assessment" brochure, and a Fact Sheet listing county-wide results compared to those of their occupational category type. Direct feedback to respondents is the best method for fostering continued liaison between the college and the private sector. It enhances cooperation and builds confidence between the public and private sectors as well as furthering the College goal of meeting the needs of its constituencies.

Below is a schematic of the entire four phase process:

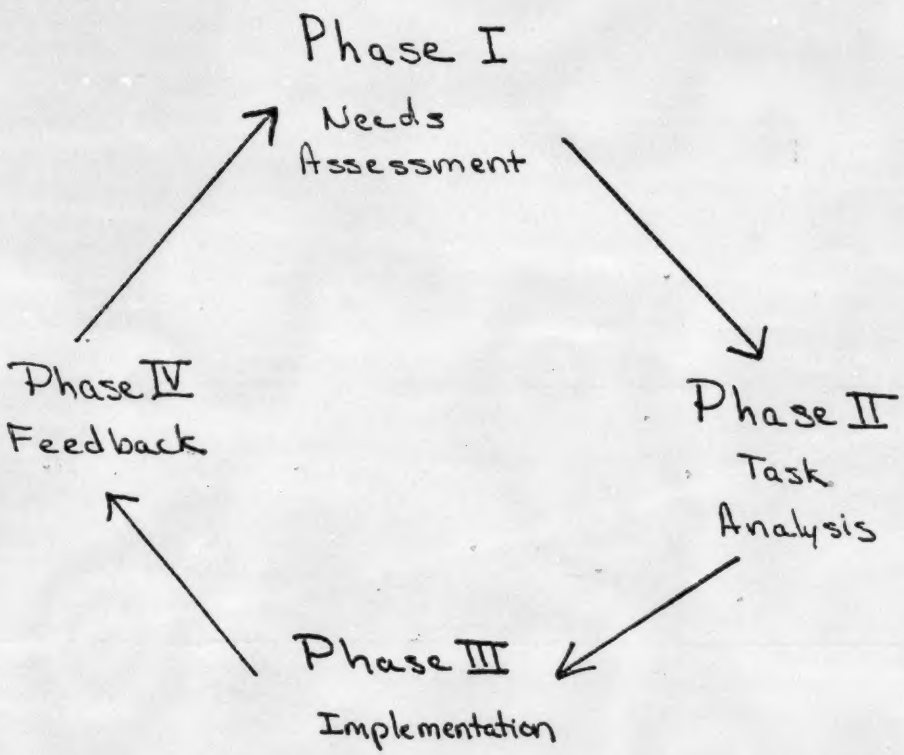

Fig. 1. Four Phases of Employer-Centered Action Model

Procedures for Data Collection and Analysis for Phase II

The major demand areas were identified county-wide as priority needs. To further refine the list, a survey was mailed to a random selection of companies within the identified occupational areas. Employers were requested to:

a. Rank the given titles in order of highest priority

b. Indicate any omitted high priority jobs

c. Indicate interest in being a member of the educational advisory panel.

The information collected from the survey was used to determine the mean rank importance of each job title in terms of perceived future needs. From this, a list of occupations for further research was determined. Each area was researched to determine whether the need was further validated and whether training was appropriate at the community college level.

As a result of the B.C.C. on-campus validation of occupational needs, the following occupational priority areas and recommended actions were established for the study:

Occupational Area	Action
Business Data Processing Computer Programmer	Evaluation of existing program
Construction Secretary	Workshop design
Engineering Drafting	Curriculum development
Electronic Technician	Evaluation of existing program
Head Nurse Management	Curriculum development
Insurance Secretary	Workshop design

An outline of the general procedures followed by the research team for the interviewing process are listed below:

1. A list of the occupational areas to be researched was determined and an advisory board was established
2. Mailing lists were established for each occupational area using a stratified random sampling
3. Letters were mailed to personnel directors/supervisors indicating the project objectives and purpose of the projected interview. Personnel directors were advised that a member of the research team would be in contact with them
4. Personnel directors were contacted by phone to set up appointments
5. Personal interviews were conducted with personnel directors involving Part A of the task analysis instrument. Time involved was approximately half an hour (see Appendix C) Part B was left at the company to be filled in at the convenience of the personnel director and mailed back to the college
6. Employee validations were mailed to the personnel directors to be filled in by a designated employees currently employed in the specified occupational position. Upon completion, questionnaires were returned to B.C.C. by mail
7. Results of the surveys were coded and analyzed
8. Letters were sent out at the end of the project thanking personnel directors for participating and presenting a summary of the major findings of the project.

Since the project was concerned with several varied occupational areas the instrument was developed to be generic in design. A three-part questionnaire was drafted:

Part A: General information pertaining to the position. Presented to the personnel director/supervisor in the form of a personal interview, designed to take no more than half an hour.

Part B: Detailed job description to be filled out by the personnel director/supervisor and returned to BCC by mail.

Part C: Employee Validation: To be filled out by a person currently employed in the position and returned to BCC by mail.

The instrument was pilot-tested for the purpose of validation. Employers in occupational areas which were eliminated from the study were utilized as the test sample. The draft task analysis was submitted to the advisory board for evalauation, and relevant BCC campus personnel checked the format for relevancy to the particular occupational areas. Revisions were made in some areas, which were again tested before the final version of the task analysis was produced.

Data were analyzed utilizing both descriptive and inferential statistics. Generic information obtained from Part A of the questionnaire was tabulated to determine the percentage frequency distributions for each of the six occupational areas. Part B obtained from the supervisor (employer) was used to identify tasks which were then listed for the employee validation (Part C). Data from Part C, in the form of

Likert-type scales, were analyzed by calculating means and ranking the tasks in order of both frequency and importance.

The Statistical Package for the Social Sciences (SPSS) was used to determine adjusted frequencies and percentages, means, and standard deviations. Responses to the tasks analyses were manually ranked according to the mean response for both importance and frequency of tasks and were reported in tabular format. Only those responses which were above the midpoint were reported in the final tasks statements for each case.

Since a saturation sample was employed for each occupational area, there was no need to generalize beyond the samples studied. The Pearson product-moment correlation (r) was used to determine the extent of correlation between supervisors and employees with regard to characteristics of the job. The Chi-square one-sample test was used to determine goodness-of-fit for the six individual samples (each occupational area was treated independently of the others).

Results for Phase II

Job entry level competencies were identified for each occupational area in terms of importance and frequency as reported by supervisors and validated by employees functioning in the position being investigated. They were rank-ordered and appear in the results section of full study report. Curriculum development in the form of degree programs, workshops, or supplemental programs and/or curriculum evaluation were recommended for each occupational area.

Procedures for Data Collection and Analysis for Phase III

Results of Phase II, the task analysis, were given to program managers and discussed with them by the Director of Institutional Research. Task forces were established in each of the six areas of concern and consisted of the department chairpersons and faculty of all three campuses, the respective academic dean, the Vice-President for Academic Affairs, and the Director of Institutional Research. The purpose of the task forces was to more fully translate task analysis results into program objectives, to establish liaison with employers, and to implement the recommended changes in curriculum or to initiate new curricula.

Additional input from employers led to the decision to eliminate the occupational program in drafting, since college graduates were not afforded a career ladder or remuneration any different than that for persons with no college experience. For the other areas, a proposal was submitted for Staff and Program Development funds to enable faculty members to obtain released or reassigned time for Fall 1980 to begin working in the field in close liaison with employers. This action will allow faculty to become aware of technological and philosophical changes in the field and subsequently to make meaningful changes in the program objectives and the outcome competencies of completers.

Procedures for Phase IV

Phase IV is the feedback phase where the results of the needs assessment (Phase I), task analyses (Phase II), and implementation (Phase III) are evaluated in a combination summative/formative fashion so that the process is evaluated by all those individuals involved (as identified in Mehallis, 1978 & 1979) and looped back into the model for the subsequent needs assessment, i.e., cycling from Phase IV back to Phase I (see page 15).

All persons to whom results at each stage should be disseminated were identified and asked to evaluate the employer-centered action model in terms of its adequacy as a tool for decision-making regarding curriculum design and curriculum evaluation. The model was considered as very worthwhile by all those involved in the process.

Impact

Results of the study have identified major areas of concern in six specified occupational areas, however, the greatest impact of the study is the result of pilot-testing of the employer-centered action system for both developing and evaluating curricula. The model, which was derived from the sutdy, brings emphasis to the needs of employers and couples them with the available instructional expertise to fulfill those needs. Supervisors and personnel directors can be used to identify skill requirements necessary for obtaining employment, while employees in the actual position being investigated can be used to validate the skills necessary to perform satisfactorily on the job. Although review of the leterature indicated a need for an employer-centered curriculum model for technical programs, the complete process of such an employer-centered action curriculum model has never before been validated and used successfully in a community college as part of the on-going institutional research effort as was done here.

Results of the study have verified the need to communicate with employers concerning their needs as consumers of the educational product: the graduate. Channels of cooperation in the educational efforts of Broward Community College with the employers of its service district have been opened. The educational system can no longer afford to develop curricula without the active participation of employers --beyond the average advisory committees. This model is the initial step.

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